Patent Claims

1. A method of heat drilling holes into ice, comprising the steps of:

forming a vertical pre-bore hole (9) of small diameter with a meltpwash drill head;

positioning a melt-wash dril head (1) of larger diameter on the pre-bore hole (9);

heating water as a heat carrier on the surface of the ice;

controlled pumping under pressure of the hot water (4) into the rinse-wash drill head;

deflecting the hot water (4) in the range of the melt-wash drill head (1) into a radial plane (5);

washing the hot water (4) as a sharp disk-like jet (6) circumferentially radially against the wall of the bore hole (7) whereby the hot water (4) is mixed with the melt water (10) and pressed into the direction of the surface of the ice;

lowering of the melt-wash drill head (1) for froming a main bore hole (19); and

dissipating by seepage or pumping the hot water (4) pressed in the direction of the surface of the ice and mixed with the melt water (10).

2. The method of claim 1,
characterized by
the water being heated to temperatures of up to 90 °C.

3. The method of one of claims 1 or 2,
characterized by
the hot water (4) being pumped at pressures of up to the range of 10^7 Pa.

4. The method of one of claims 1 to 3,
characterized by

a cavern being washed out with the wash water at a depth of up to 50 meters and the wash water mixed with the melt water (10) being pumped into it for dissipation by seepage.

5. The method of one of claims 1 to 4,
characterized by
a cylindrical guide element (29) being inserted by a cable (32) into the main bore hole (19) in the transition range between the lower ide edge (30) and the sea (31).

6. An apparatus for practicing a method of heat drilling holes into ice by a drill head heatable by hot water as well as a supply and hoisting and lowering crane device, especially in accordance with one of claims 1 to 5,
characterized by
the drill head being structured as a combination melt-wash drill head (1) provided at its upper end with an axial water input (2) and at its lower end with a hemispherical melt section (3) as well as above the melt section (3) but below the water input (2) with a narrow azimuthally circumferental annual gap (5) connected to the water input (2) as the water output, the entire melt-wash drill head (1) being formed of a material of good heat conductivity.

7. The apparatus of claim 6,
characterized by
the azimuthally circumferential annular gap (5) being of a width in the range of a millimeter.

8. The apparatus of claim 6 or 7,
characterized by
the material of good heat conductivity being copper.

9. The apparatus of one of claims 6 to 8,
characterized by
the melt-wash drill head (1) being hollow in the range below the annular gap (5) and a plurality of radial vanes (24) being connected with the annular gap (5) by large surfaces.

10. The apparatus of one of claims 6 to 9,
characterized by
the melt-wash drill head (1) being constructed of a plurality of hydraulically tightly clamped together radial layers (25).

11. The apparatus of one of claims 6 to 10,
characterized by
a hose (17) for feeding the hot water (4) to the axial water input (4) and a cable for hoisting and lowering the melt-wash drill head (1) form a unit.